

From outback to outer space

Thomas set to bridge first, second phases of space station as last American aboard Russian station

A year ago this month Astronaut Andy Thomas volunteered to train as backup to the final U.S. crew member scheduled aboard Russia's Mir Space Station. He would fly on the world's only space station if, and only if, the primary astronaut was unable to fulfill the requirement ...

By Kyle Herring

... Or suddenly be moved to an earlier slot, opening the door—or hatch, as the case may be—for another astronaut to wind up the Phase 1 Program.

Well, that's exactly what happened when a series of decisions led to Dr. David Wolf flying earlier in the shuttle launch schedule. That left an empty seat for Thomas on the middeck of *Endeavour* flying to Mir next week with a return ticket assured on the lower deck of *Discovery* in June. That flight will mark the final visit of a shuttle to the orbiting laboratory, completing more than two years of continuous U.S. presence on Mir, which began in March 1996.

Surprise would be an understatement as to Thomas' reaction when the decision was made that Wendy Lawrence would not visit Mir for a long-duration stay putting Wolf in the slot she would have taken and elevating (literally) Thomas to one of on-orbit scientist rather than earthbound backup.

"I remember that day when those changes were made," Thomas says. "And over the course of about 15 minutes, I learned that the world changed very dramatically for me in a big way."

Thomas reacted with "an element of disbelief because I went to Russia expecting to be trained as a backup with a low likelihood of flying." He adds, jokingly, that "it certainly made me a whole lot more interested in the training."

That training at the Gagarin Cosmonaut Training Center on the outskirts of Moscow is viewed by Thomas as an "extraordinary" and "fascinating" experience.

"I worked quite hard to create this opportunity and position myself for it," he says, "but never in my wildest dreams would I have ever imagined that I would go through basic cosmonaut training and that's just been an extraordinary experience to do that. To live in Russia, and to go through that whole fascinating training flow has been a great personal reward to me. And even if I had not gotten a flight out of this, I still would have been very happy with the outcome."

Now that the opportunity to fly in space on the last long-duration mission of the Phase 1 Program has presented itself to Thomas, he plans to make the most of it by following in the footsteps of his predecessors.

"It is an amazing opportunity to be with a collection of astronauts—my predecessors on Mir—who have completed these missions successfully," he says. "They are all going to be tough acts to follow."

A native of Australia, Thomas recognizes the warmth and support his home country has provided him throughout his career, but sees this trip to space as a bit more.

"I think this is probably a major defining experience in my life and I

do have a sense of pride," he says. "Perhaps not so much national pride as just basic pride in having stepped up to this opportunity and seen it through."

And his family's reaction to his announcement that he would fly on Mir in the wake of several niggling problems?

"When I first told them I was going to Russia as a backup there was sort of a question in their mind," he says. "They didn't really understand why (I'd) do it if there's not a flight. And they didn't understand that there were a lot of benefits that I would accrue professionally from the experience even though I wouldn't have gotten a flight."

"They were very pleased to hear that I was going to fly on Mir although they did have some concerns because they, like everyone else, had been seeing the popular press which I think presented a rather jaded view of activities on Mir. I didn't have to convince them that it was safe for me to go. I think they trusted my judgment about what I was doing and knew that I certainly wouldn't do anything that was unsafe."

Though Thomas has not done anything particularly extraordinary to prepare for this more than four month trip, he says he feels the hours spent at Star City alone studying the Russian language will be of great benefit to adjusting to life aboard Mir.

"The biggest preparation item of this whole thing is to develop some skill at Russian. In that process of living in Star City and studying," Thomas says, "you tend to be somewhat isolated from people and you spend a lot of time alone and studying so that perhaps does prepare you in some sense for a long-duration flight."

As the time draws near for *Endeavour's* launch, Thomas reflects on his thoughts as the hatches close between the orbiter and station leaving him with his cosmonaut colleagues Anatoly Solovyev and Pavel Vinogradov—no longer strangers to working with their American friends.

"I've tried to project myself into that scenario and, you know, it's pretty tough to do because there are so many emotional issues and physical issues involved," he says. "You've just come through a launch into space. You're orbiting the Earth. You're doing something you've been trained for, and suddenly you're no longer in a U.S.-made vehicle. You're in a Russian piece of hardware with a Russian crew."

"I think it's got to be a very emotional moment because you're saying good-bye to your friends ... and now the work starts. The real work starts and you've got a big commitment of time and discipline ahead of you to complete the flight program."

On the other hand, Thomas expects to feel some amount of relief that the experiment work he trained for finally will be getting under way after the hatches close.

"I think it's going to be an emotional moment, but I think it'll be a good moment because at last, now we're getting on with it. We can put the training aside and we can really do this properly," he says.



Above: Astronaut Andy Thomas poses for a Mir 25 crew portrait with Mir-25 Flight Engineer Talgat Musabayev, center, and Commander Nikolai Budarin, right, with whom he trained in Russia. Musabayev and Budarin will follow Thomas to Mir, launching later this month along with French cosmonaut Leopold Eyharts. That crew will replace Mir 24 Commander Anatoly Solovyev and Flight Engineer Pavel Vinogradov, who will return in mid-February with Eyharts. Thomas expects emotions to run high upon his departure in early summer.



Thomas spent a year training in Russia for his upcoming stay aboard the Mir Space Station, first as a backup crew member and now as the last American astronaut scheduled to live on the station, completing the Space Shuttle Phase 1 Program of shuttle dockings with Mir and a continuous American presence aboard the Russian outpost that began in March 1996. Above left: Thomas sets off an orange smoke flare during water survival training in the Black Sea. Above right: Thomas warms himself by a fire in Siberia during cosmonaut land survival training.

Thomas says he can only imagine how he will feel upon *Discovery's* arrival to bring him home. He will spend the last half of his increment aboard Mir with a new crew with which he has trained in Star City. Talgat Musabayev and Nikolai Budarin will launch later this month along with French cosmonaut Leopold Eyharts. That crew will replace Solovyev and Vinogradov, who will return in mid-February with Eyharts. Thomas expects emotions to run high upon his departure in early summer.

"Well I think having just spent four and a half months with Talgat and Nikolai, living every day with them, and being part of that team," he says, means "it's going to be tough to just close the hatch on them and say good-bye."

On the flip side, Thomas says he believes ending the Phase 1 Program will be good, also, "because I'll be coming home and I will have completed my flight program and I will have completed a challenge that I had put ahead of me more than a year ago—to undertake the learning of the language, the learning of the Russian systems, and to undertake the Russian training, which is not an easy thing, and then to fly."

Completing the program "is going to be a very rewarding moment," Thomas says. "To be able to say to myself that I've done it; I've completed this program."

Phase 1's momentum will carry the space programs of the U.S., Russia and the remaining interna-

tional partners into the next step, the assembly in space of the International Space Station. Should the schedule hold, the first element to be launched will be moved from its gigantic assembly plant outside Moscow to the Baikonur launch site in Kazakstan. It is set for launch on a Proton launcher on the last day of June—just days after Thomas returns home.

"It is important, I think, that somehow we look at the shuttle-Mir program and the lessons learned, and the mistakes made ... and make sure that we benefit from those lessons learned." Thomas says more information will always be needed to further our knowledge of life in space.

"If you're doing studies on the way the human body reacts to some stressful environment and you only have seven test subjects, that's not very much," he says. "So every additional data point you get is a large proportion of your whole data that's available to you. So we're not just polishing, or refining. We're substantially building on the database."

Now that the launch is days away, Thomas spends his time refreshing the training he has undergone, first as Wolf's backup and now as the prime crew member to stay aboard Mir. He says he has no apprehensions about the actual stay on Mir, but only the usual thoughts on the preparation.

"You have the usual apprehensions about training for a space flight: Has the training covered everything that you need to know?

Is there some aspect of this that you've overlooked? You hope there isn't," Thomas says. "Or in the case of long-duration space flight, am I taking everything that I need in order to complete the work up there in order to live comfortably. There's always a little concern that you might have forgotten something that you'll come to miss. But I don't have any other apprehensions about this trip at all."

His space flight experience to date has consisted of a single shuttle flight on the STS-77 mission in May 1996. That, coupled with the training in Russia hopefully has provided experience for the future—whatever that may hold for Thomas.

"After this trip into space it would seem to me that the experience of having trained in Russia, as well as the experience of having flown a long-duration space flight, would be invaluable to support the programs that we have in the International Space Station," he says.

Does that mean another trip into space for a lengthy period is in the offing for Thomas?

"I've been asked that," he says. "And I'll have to wait and see how I feel about this. I don't know, maybe I've only got one long-duration flight in me and that'll be enough, but I'll see. I'm keeping an open mind on it."

His open-mindedness is what led Thomas to volunteer for, first the training, and now the space flight to move the world one orbit closer to the beginning of the assembly of the International Space Station.